UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

October 3, 2008

Mr. Charles G. Pardee
President and Chief Nuclear Officer (CNO), Exelon Nuclear
Chief Nuclear Officer (CNO), AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: INSPECTION REPORT 05000352/2008006 AND 50000353/2008006 AND 07200065/2008001, LIMERICK GENERATING STATION INDEPENDENT SPENT FUEL STORAGE INSTALLATION CONSTRUCTION, PREOPERATIONAL, AND INITIAL LOADING CAMPAIGN

Dear Mr. Pardee:

This refers to the inspection conducted between July 2, 2007, and August 1, 2008, at the Limerick Generating Station. This inspection involved a review of ISFSI construction activities, the pre-operational demonstration of cask loading, welding, transport, and unloading, and initial loading of spent fuel into the Independent Spent Fuel Storage Installation (ISFSI) facility. The inspection included field observations, examination of procedures and documents, and interviews with personnel. The findings of the inspection were discussed with members of the Limerick staff during an exit meeting on August 19, 2008. The enclosed report presents the results of the inspection.

Based on the results of this inspection, the NRC has identified an issue that was evaluated under the risk significance determination process as having very low safety significance (green). The NRC has also determined that violations are associated with this issue. This violation is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A of the Enforcement Policy. The NCV is described in the subject inspection report. If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001, with a copies to the Regional Administrator, Region 1, and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001 and the NRC Resident Inspector at the Limerick Generating Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Sincerely,

/RA/

Raymond Lorson, Chief
Decommissioning Branch
Division of Nuclear Materials Safety

Docket Nos: 50-352, 50-353, 72-065
License Nos: NPF-39, NPF-85
Enclosure: Inspection Report 05000352/2008006 and 07200065/2008001

cc w/encl:
C. Crane, President and Chief Operating Officer (COO), Exelon Corporation
M. Pacilio, Chief Operating Officer, Exelon Generation Company, LLC
C. Mudrick, Site Vice President, Limerick Generating Station
E. Callan, Plant Manager, Limerick Generating Station
R. Kreider, Regulatory Assurance Manager, Limerick
R. DeGregorio, Senior Vice President, Mid-Atlantic Operations
K. Jury, Vice President, Licensing & Regulatory Affairs
P. Cowan, Director, Licensing
D. Helker, Licensing
B. Fewell, Associate General Counsel, Exelon
Correspondence Control Desk
D. Allard, Director, PA Dept of Environmental Protection

cc w/encl:
J. Johnsrud, National Energy Committee, Sierra Club
Chairman, Board of Supervisors of Limerick Township
J. Powers, Director, PA Office of Homeland Security
R. French, Dir, PA Emergency Management Agency

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J. Powers, Director, PA Office of Homeland Security
R. French, Dir, PA Emergency Management Agency

Distribution w/encl: (via E-mail)
S. Collins, RA
M. Dapas, DRA
D. Lew, DRP
J. Clifford, DRP
P. Krohn, DRP
R. Fuhrmeister, DRP
T. Setzer, DRP
E. DiPaolo, DRP, Senior Resident Inspector
N. Sieller, DRP, Resident Inspector
L. Pinkham, Resident OA
S. Williams, RI, OEDO
P. Bamford, PM, NRR
E. Miller, NRR, Backup
R. Nelson, NRR
H. Chernoff, NRR
ROPreports@nrc.gov
Region I Docket Room (with concurrences)

SUNSI REVIEW COMPLETE: _____RKL___ (Reviewer's Initials)

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NAME	JAmbrosini/JAT per email		JSchmidt/JWS		PKrohn/PGK *		RLorson/RKL	
DATE	10/01/08		10/01/08		10/01/08		10/03/08	

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U.S. NUCLEAR REGULATORY COMMISSION

REGION 1

Docket Nos.:	50-352, 50-353, and 72-065
License Nos.:	NPF-39, NPF-85
Report No:	05000352/2008006; 05000353/2008006 and 07200065/2008001
Licensee:	Exelon Generation Company, LLC
Facility:	Limerick Generating Station, Units 1 & 2
Location:	3146 Sanatoga Road, Pottstown, PA 19464
Dates:	July 2, 2007 through August 19, 2008
Inspectors:	J. Ambrosini, Project Engineer, Division of Reactor Projects (DRP) M. Beardsley, Senior Health Physicist, Division of Nuclear Materials Safety (DNMS) E. Burkett, Reactor Inspector, Division of Reactor Safety (DRS) S. Chaudhary, Senior Reactor Inspector, DRS M. Gordon, Materials Engineer, Nuclear Material Safety and Safeguards (NMSS) E. Love, Safety Inspector, NMSS M. Modes, Senior Reactor Inspector, DRS J. Nicholson, Health Physicist, DNMS J. Pearson, Senior Safety Inspector, NMSS M. Roberts, Senior Health Physicist, DNMS J. Schmidt, Health Physicist, DNMS C. Staab, Project Manager, NMSS
Approved by:	Raymond Lorson, Chief Decommissioning Branch Division of Nuclear Materials Safety

SUMMARY OF FINDINGS

IR 05000352/2008006; 05000353/2008006 AND 07200065/2008001; 07/02/2007 - 08/19/2008; Limerick Generating Station Independent Spent Fuel Storage Pad Construction, Preoperational, and Initial Spent Fuel Loading Campaign.

The report covered a period of announced inspection by regional and headquarters inspectors. One Green finding, which was a non-cited violation (NCV) was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

The inspectors reviewed equipment performance, programmatic controls and documentation, and personnel performance to assess Exelon's compliance with the Transnuclear's Certificate of Compliance, Technical Specifications, and 10 CFR Part 72 requirements. Specific inspection areas included: welding techniques, installation and testing of the fuel storage building handling gantry crane, security and radiological controls, quality assurance, worker training, reactor engineering, and spent fuel handling activities.

A. NRC Identified Findings

- Green. A Green non-cited violation (NCV) of 10CFR Part 50, Appendix B, Criterion III, "Design Control" was identified. The NCV was related to Exelon's failure to implement a preventative maintenance requirement described in a design calculation used to upgrade the 125 ton reactor building bridge crane.

  The finding is more than minor because, if left uncorrected, it could become a more significant safety concern if the crane components were allowed to degrade in an undetected manner. Specifically, the failure to develop the specified preventative maintenance practice could lead to operation of the crane in a degraded condition. The inspectors used Inspection Manual Chapter 0609 Appendix M, "Significance Determination Process Using Qualitative Criteria," because other significance determination process guidance was not suited to provide reasonable estimates of the significance of this inspection finding. With the assistance of Region I management, the inspectors determined that the finding was of very low safety significance (Green) because there was no actual crane operational problem during the spent fuel handling activities. (Section 6)

REPORT DETAILS

Summary of Facility Activities

During the inspection, Exelon was involved with the construction and initial loading of spent fuel into a Transnuclear, Inc. (TN) Standardized NUHOMS Horizontal Modular Storage System. The generally-licensed NUHOMS independent spent fuel storage installation (ISFSI) constructed at Limerick was fabricated and utilized in accordance with Revision 9 to the Certificate of Compliance (CoC), Certificate No. 1004, issued to TN effective April 17, 2007 (ADAMS Accession No. ML071070582). The major components of the NUHOMS system included the Model 61BT dry shielded canister (DSC) used to contain the spent fuel being stored, a transfer cask (TC) used to shield the DSC during onsite transport, and the above-ground concrete horizontal storage modules (HSMs) used for long term shielded storage of the loaded DSCs. Other major operational components used to interface with these components included the transfer trailer (TT) used to support DSC/TC repositioning, DSC/TC transport to the HSM, and transfer of the DSC from the TC to the HSM; a specialty tractor used to pull the loaded TT; and a 125 ton reactor building bridge crane used to lift the DSC and TC within containment.

Exelon construction activities for the first twenty-four HSM units was completed in January 2008, and the pre-operational test as required by the CoC technical specifications was completed on July 10, 2008. Between July 21, 2008 and August 1, 2008, Exelon loaded the first DSC with spent fuel and installed it into an HSM as part of the initial spent fuel storage campaign. Notification of the initial fuel loading campaign as required by 10 CFR 72.212(b)(1)(i) was made by the Exelon on April 11, 2008 (ADAMS Accession No. ML081120229).

1. Independent Spent Fuel Storage Installation Construction

a. Inspection Scope (IP 60853)

The inspectors reviewed construction documents and records associated with the construction of the Limerick Independent Spent Fuel Storage Installation (ISFSI) pad. The inspectors discussed construction activities with cognizant personnel, toured the construction site, and observed work activities.

b. Observations and Findings

No findings of significance were identified.

The inspectors verified that the construction details for the ISFSI pad were bounded by the design parameters for the dry cask storage system selected for use at Limerick. The inspectors also verified that the design specifications for the ISFSI pad were met in the construction documentation.

The inspectors reviewed nonconformance reports for pad construction specifications and rework activities and noted two issues that Exelon resolved prior to completing the pad construction. One issue related to areas of the pad being out of tolerance for uniform thickness, and the second issue related to test cylinder measurements being out of tolerance during concrete compressive strength testing. Both issues were resolved and Exelon's corrective actions appeared effective.

c. Conclusions

Exelon provided the necessary documentation to indicate that the design specifications for the ISFSI pad were met, and were bounded by the design parameters for the Transnuclear, Inc. Standardized NUHOMS Horizontal Modular Storage System.

2. Preoperational Test Program

a. Inspection Scope (IP 60854)

Between June 30 and July 10, 2008, the inspectors evaluated a dry run demonstration by Exelon that included loading of mock bundles into a DSC; evacuation, helium purging and sealing of a mock-up DSC; handling, transporting, and inserting of a fully loaded DSC into the HSM; extraction of a fully loaded DSC from the HSM; and opening of a mock-up DSC. This review included observation of the activities being performed, interviews with personnel conducting the activities, and reviews of select Exelon procedures and documents prepared to support the conduct of these activities. The inspectors also evaluated Exelon's assessment of scratches that occurred to a DSC and TC as a result of the DSC insertion into the HSM during the dry run.

b. Observations and Findings

No findings of significance were identified.

The inspectors identified several minor procedural problems including:

- minor differences, such as a few radiological precautions, between the procedures used in the dry run and the procedures used during the actual ISFSI loading campaign;
- the use of an incorrectly scaled pressure gauge to determine DSC helium pressure; and,
- the procedural guidance did not provide a method to purge air from the charging lines before new helium bottles were placed into service during the DSC helium backfill.

Exelon entered these discrepancies into their corrective action program and resolved the inspector-identified problems before the loading campaign began.

As part of the pre-operational test, Exelon identified that after successfully inserting the DSC into the HSM, a failure occurred on the TT during the retraction of the hydraulic ram

from the DSC. Specifically, the pillow block bearing housing (located at the base of the ram tilting cylinder used to horizontally align the DSC insertion/retraction ram) failed as a result of an unexpected tensile load on the bearings. From a review of the physical evidence, equipment documentation, and industry experience with transport trailer failures, Exelon determined that the most likely cause of the event was undesirable contact between the grapple ring and the DSC immediately following the DSC insertion. This hindered the subsequent hydraulic ram realignment required to support successful ram retraction. There was no impact on safety as a result of this event and Exelon revised the existing procedures to prevent recurrence.

c. Conclusions

Overall, Exelon demonstrated they could successfully load mock fuel bundles into the DSC, seal the DSC, transfer a fully loaded DSC to the HSM, insert the fully loaded DSC into the HSM, remove the DSC from the HSM, and open the DSC in order to remove spent fuel.

3. Review of Evaluations

a. Inspection Scope (60856)

The inspectors evaluated Exelon's compliance with the requirements of 10 CFR 72.212 and 10 CFR 72.48. The inspection consisted of interviews with cognizant personnel and a review of license documentation. Exelon is required, as specified in 10 CFR 72.212(b)(1)(i), to notify the NRC of the intent to store fuel at an ISFSI at least 90 days prior to the first storage of spent fuel under this general license. Exelon notified the NRC on April 11, 2008, of their intent to use the Standardized NUHOMS Horizontal Modular System in accordance with CoC Number 1004. This letter met the requirement for the 90-day notification. Exelon is required, as specified in 10 CFR 72.212(b)(1)(ii), to register the use of each cask with the NRC within 30 days of using that cask to store spent fuel. At the time of the inspection, Exelon had not provided this registration but was preparing to do so based on the results of the dry run inspections

b. Observations and Findings

No findings of significance were identified.

A written evaluation is required per 10 CFR 72.212(b)(2)(i), prior to use, to establish that the conditions of the CoC have been met. The inspectors determined that Exelon developed its written evaluation to confirm the ISFSI was within the licensed scope in the draft "Limerick Generating Station Independent Spent Fuel Storage Installation 10 CFR 72.212 Evaluation," dated June 10, 2008.

The inspectors verified that Exelon had performed written evaluations which confirmed that the conditions set forth in the CoC had been met, the ISFSI pad had been designed to support the load of stored casks, and the requirements of 72.104 had been met. The inspectors determined that applicable reactor site parameters, such as fire and explosions, tornadoes, wind-generated missile impacts, seismic qualifications, lightning,

flooding, and temperature, and had been evaluated for acceptability with bounding values specified in the NUHOMS Horizontal Modular System Safety Analysis Report (SAR) and the NRC Safety Evaluation Report (SER).

The inspectors noted that a 50.59 evaluation of the construction and operation of the ISFSI and plant interfaces had been performed to demonstrate that changes to plant Technical Specifications, or a license amendment were not required and that ISFSI-related work activities would not impact the safe operation of Limerick Generation Station. No safety concerns were identified, although there were some minor discrepancies identified by the inspector and corrected by Exelon prior to the initial fuel loading campaign.

The inspectors reviewed selected procedure changes related to the emergency preparedness, quality assurance, training, and health physics programs as well as determining their retrievability and control with Exelon processes. The inspectors interviewed Exelon representatives to determine if they were knowledgeable about the impacts of ISFSI activities. The inspectors determined that the appropriate programs had been reviewed and the determinations were found to be acceptable.

c. Conclusions

Overall, the 10 CFR 72.212 evaluation was found to be acceptable. During the review the inspectors noted a number of minor discrepancies. Each discrepancy was documented and then subsequently corrected by Exelon in the draft revision 1 of the "Limerick Generating Station Independent Spent Fuel Storage Installation 10 CFR 72.212 Evaluation," dated June 10, 2008.

4. Fuel Characterization and Verification

a. Inspection Scope (IP 60854)

The CoC for the NUHOMS 61BT cask system specifies the parameters that must be met in order to allow spent fuel to be stored at the ISFSI. The inspectors evaluated Exelon programs to verify that spent fuel assemblies selected for storage met the applicable requirements of the CoC. The inspection consisted of interviews with cognizant personnel and a review of Exelon documentation.

b. Observations and Findings

No findings of significance were identified.

The inspectors reviewed Exelon's process for selecting and verifying fuel assemblies for placement into dry cask storage. The inspectors reviewed various documents associated with the qualification, characterization, and selection of fuel assemblies for storage at the ISFSI. Technical Specifications require that selected fuel assemblies be independently verified and documented prior to loading and be within specified limits for such parameters as fuel enrichment, burn-up, and decay heat output. The inspectors discussed the fuel selection process with Exelon personnel and determined that

individuals were knowledgeable of the Technical Specification requirements.

Prior to the initial ISFSI campaign, the inspectors verified that that Exelon selected fuel bundles that met the requirements of the CoC and associated technical specifications, and that approved Exelon procedures were used to select, move, and verify that the proper bundles were actually positioned into the DSC.

c. Conclusions

Exelon developed a program to ensure the proper selection and characterization of fuel assemblies for storage in accordance with approved procedures. Exelon documentation supported the proper characterization of the first 61 fuel assemblies to be loaded, and demonstrated that these fuel assemblies met the design parameters specified in the CoC Technical Specifications.

5. Welding and Nondestructive Testing

a. Inspection Scope (IP 60854)

The inspectors observed and evaluated the welding and nondestructive examination (NDE) processes to determine whether the Limerick staff and Exelon's contractors had developed the capability to properly weld and perform NDE on the type of DSC to be used for storage of spent fuel at the Limerick Generating Station site.

b. Observations and Findings

No findings of significance were identified.

Exelon utilized the services of a dedicated contractor welding and nondestructive examination team experienced in the DSC type used at Limerick. The welding portion of the dry run was observed by the inspectors on June 11, 2008. The inspectors observed the welding equipment setup, welding of the mockup DSC vent and siphon covers and the outer cover, visual weld examination, penetrant testing, and helium leak-testing of the shield cover and drain/vent port covers.

The applicable welding procedure was reviewed. The inspectors discussed the work steps and plans with those involved and reviewed portions of various controlling procedures to verify their adequacy. The inspectors also examined the welding equipment, observed welding in progress on a DSC vent and siphon cover and the outer cover, and reviewed welder qualification records and portions of the welding and NDE procedures. The inspectors attended the pre-job briefings on June 11, 2008, for welding the vent and siphon covers onto the DSC and welding of the outer cover. The pre-job briefing was thorough and covered key aspects of the activity, including a review of relevant industry operating experience. The inspectors observed preparations for welding activities on June 11, 2008. Contractor personnel were knowledgeable of their work activities and worked closely with Exelon personnel. Rigging and handling of the lid, welding machine, and associated equipment were performed in a safe manner. The welding machine was prepared for use in accordance with approved procedures.

Personnel were meticulous in ensuring proper alignment of the welding machine and that support equipment was properly prepared before welding was allowed to commence.

c. Conclusions

Exelon successfully demonstrated the ability to adequately weld and perform NDE of DSCs. Welding activities associated with DSC closure were performed in accordance with approved procedures. Personnel were qualified to perform their assigned functions.

6. Heavy Loads Program

a. Inspection Scope (60854)

Exelon was required to demonstrate the adequacy of their heavy loads program pertaining to the movement of the DSC and TC from the spent fuel pool to the truck bay and placement of the cask on top of the transfer trailer for transport to the ISFSI pad. The inspection consisted of field observations, interviews with cognizant personnel, and reviews of Entergy documentation.

b. Observations and Findings

Introduction

The inspectors identified a Green non-cited violation of 10CFR Part 50, Appendix B, Criterion III, “Design Control” for the failure to properly implement a preventative maintenance requirement described in a design calculation.

Description

The inspectors reviewed LM-528, a calculation developed to raise the Maximum Critical Load (MCL) of the safety related Limerick reactor building bridge crane from 110 tons to 125 tons. This crane had a design rated load of 125 tons, but the MCL was rated at 110 tons to comply with section 2.2 of NUREG 0554, which recommends a 15% margin to account for degradation due to wear and exposure. Exelon initially re-rated the crane in 1995 to allow use of a GE Strongback Carousel Assembly to lift the reactor vessel head and studs. As a result of the re-rate, the current MCL of the crane is 125 tons.

In this calculation, the main hoist gear drives are addressed qualitatively which resulted in a 50% design margin due to their redundant design. To ensure wear margin for the hoist gear drive would be maintained, the calculation identified the need to periodically analyze the hoist drive gear box lubricating oil to monitor for excessive gear wear.

According to calculation LM-528, this sample should be obtained during the performance of M-098-002, “Reactor Enclosure Crane Frequent Inspection and Maintenance,” which is performed monthly. The inspectors identified that this procedure had no step for oil sampling or analysis, just a step to check the oil level and fill as necessary. Exelon has a procedure that is performed annually, M-098-001, “Reactor Enclosure Crane Periodic Inspection and Maintenance,” which includes a step to obtain an oil sample, but no

requirement to analyze the sample. The inspectors reviewed available oil sample data for the crane and found that the last recorded sample analysis was from October 2002.

The main hoist gearbox was replaced in December 2007, due to wear problems and machining of the gearing. In addition, as Exelon prepared for their ISFSI dry run inspection, they experienced delays due to problems with the reactor crane including a bearing failure and other gearbox problems.

Exelon entered this issue into their corrective action program and subsequently revised their preventative maintenance practices to monitor for gear degradation as specified in design calculation LM-528.

Analysis

The performance deficiency associated with this finding was related to Exelon's failure to translate a preventative maintenance requirement described in a design calculation used to upgrade the 125 ton reactor building bridge crane into the approved crane inspection procedures. The finding is more than minor because left uncorrected it could become a more significant safety concern if the crane components were allowed to degrade in an undetected manner. Specifically, the failure to develop the required preventative maintenance activity could lead to operation of the crane in a degraded condition.

The inspectors used Inspection Manual Chapter 0609 Appendix M, "Significance Determination Process Using Qualitative Criteria," because other significance determination process guidance was not suited to provide reasonable estimates of the significance of this inspection finding. With the assistance of Region I management, the inspectors determined that the finding was of very low safety significance (Green) because there was no actual crane operation problem during any spent fuel handling activities.

Enforcement

10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that applicable regulatory requirements and design basis, as defined in 10 CFR 50.2 and as specified in the license application, for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions. Specifically, Exelon personnel did not properly implement a reactor building crane preventative maintenance requirement that was described in design calculation LM-528. Because the finding is of very low safety significance, this violation is being treated as an NCV consistent with section VI.A.1 of the Enforcement Policy. **(NCV 05000352/2008006; 05000353/2008006; 07200065/2008001-01, "Failure to Implement a Maintenance Activity for the Reactor Building Crane.")**

c. Conclusions

A Green non-cited violation (NCV) of 10CFR Part 50, Appendix B, Criterion III, "Design Control" was identified. The NCV was related to Exelon's failure to properly implement a preventative maintenance requirement described in a design calculation used to upgrade

the 125 ton reactor building bridge. With the assistance of Region I management, the inspectors determined that the finding was of very low safety significance (Green) because there was no actual crane operational problem during any spent fuel handling activities.

7. Training and Qualifications

a. Inspection Scope (60854)

The inspectors reviewed Exelon's ISFSI training program to verify that appropriate training elements were established, reviewed training attendance records to assure the appropriate personnel attended the training, interviewed select personnel to determine the effectiveness of the ISFSI training, and observed Exelon's performance in the NRC dry run and initial ISFSI campaign.

b. Observations and Findings

No findings of significance were identified.

The inspectors found that Exelon established a formal site-specific ISFSI training program which addressed the NUHOMs design; the applicable CoC conditions; the approved facility fuel loading, TC handling, DSC loading and transfer, and off-normal event procedures. Exelon maintained records to demonstrate that personnel conducting ISFSI activities attended the required training. As part of this process, Exelon established a formal training matrix to assure that personnel selected for ISFSI activities were fully qualified. Interviews with Exelon personnel and field observations provided evidence that personnel were adequately trained to conduct the ISFSI activities.

c. Conclusions

Exelon personnel were adequately trained to safely conduct ISFSI activities.

8. Initial Loading of the ISFSI

a. Inspection Scope (60855)

The inspectors observed the initial spent fuel loading campaign initiated by Exelon on July 21, 2008 and completed on August 1, 2008. The inspection consisted of field observations, review of license documentation, and interviews with cognizant personnel for the initial loading of DSC serial number LGS-61B-003-A and subsequent storage of the loaded canister into HSM Vault #11.

b. Observations and Findings

No findings of significance were identified

Using existing approved procedures, Exelon appropriately selected the 61 fuel bundles, inserted them into the DSC, properly processed and seal welded the DSC, and transferred and installed the DSC into the HSM. The inspector noted Exelon procedures were updated to reflect areas for improvement previously identified during the dry run process and that the revised procedures were able to be implemented as written. The inspector verified that the revised procedures used for grapple retraction after insertion of the DSC into the HSM was changed to correct the alignment problems identified during the NRC dry run; ram positioning problems identified during the NRC dry run did not occur during the initial loading campaign.

Although the schedule for the initial DSC campaign was planned to be competed within a six-day window, additional time to dry the canister was required and the actual time to conduct the campaign was twelve days. All Technical Specification requirements were met despite the delay.

CoC Technical Specification 1.2.11(a) required that after the DSC is removed from the spent fuel pool, dose rates be taken 3 feet from the DSC while the DSC cavity is filled with water to demonstrate that they are less than or equal to 200 mrem per hour. The inspectors noted that the DSC was filled to a different level during the initial cask loading than during the preoperational testing. The additional four inches of water shielding available if the DSC was totally filled with water as opposed to being filled to the shield plug would substantially change the dose rate measurements. Both configurations met the survey geometry as generally described in the TS. Exelon requested an interpretation from TN which indicated the correct configuration to measure the dose rates and updated their procedures accordingly.

While Exelon did not establish a technically adequate procedure to implement TS 1.2.11(a), it was not considered to involve a violation of a regulation requirement since the procedure was consistent with the TS wording and Exelon promptly corrected the procedure. The inspector reported the nature of the problems encountered as a result of the non-specific wording of TS 1.2.11 for follow-up by the program office.

No ALARA concerns were identified. Exelon's original collective dose estimate for the first DSC was 0.634 person-rem and the estimated dose received was 0.715 person-rem by electronic dosimetry and calculated neutron dose. Exelon reported that the stretch goal of 0.420 person-rem was not met largely due to 0.23 person-rem used for the extended duration and associated investigation activities used for the DSC drying. On August 19, 2008, Exelon reported that the collective dose received by site personnel for the loading and storage of the second DSC was 0.620 person-rem.

b. Conclusions

Exelon safely loaded DSC serial number LGS-61B-003-A with appropriately selected spent fuel and placed into HSM Vault #11. Other than encountering a DSC drying time longer than anticipated, all activities were conducted as planned. The collective dose required to perform the first ISFSI DSC campaign required 0.7 person-rem which was above Exelon's stretch goal but consistent with the task estimate.

Exit Meeting Summary

The inspectors presented the inspection results of the construction phase of this inspection to Mr. Christopher Mudrick and other Exelon personnel at the conclusion of this inspection on August 19, 2008.

SUPPLEMENTAL INFORMATION
PARTIAL LIST OF PERSONS CONTACTED

Daryl Almond, Site Project Manager, PCI
Kevin Bortner, Nuclear Oversight Inspector
Frank Burzynski, Fire Protection
Joe Clawson, Reactor Services Manager
Joseph Cook, Reactor Services Supervisor
Tom Donovan,Radiological Controls Technician
David DiCello, Radiation Safety Officer
Wayne Emberger, Reactor Services Supervisor
Stan Gamble, Regulatory Assurance
Arduino Giangiulio, Senior Engineer
Roy Harding, Regulatory Assurance
Nick Harmon, Radiological Protection Supervisor
Steve Hamric, Technician, Leak Test Specialties Inc.
Nash Hasan, Consulting Engineer, Washington Group
Jim Kirckpatrick, Radiation Protection Engineer
Ray Matysik, Training Specialist
Michael McGoldnick, Reactor Services Lead Maintenance Technician
Stephen Minnick, Project Manager
Tim O'Malley, Procedure Writer
Joel Risteter, Rad Engineering Manager
Tim Saunders, Reactor Services Supervisor
Ron Scone, Radiological Controls Technician, Bartlett Nuclear
Gary Snyder, Reactor Engineer
John Weissinger, Nuclear Shift Supervisor
David Wiersma, PCI QA Approval

INSPECTION PROCEDURES USED

60853 Onsite Fabrication of Components and Construction of an ISFSI
60854 Preoperational Testing of an Independent Spent Fuel Storage Installation
60855 Operation of an Independent Spent Fuel Storage Installation
60856 Review of 10 CFR 72.212(b) Evaluations
60857 Review of 10 CFR 72.48 Evaluations

ITEMS OPENED, CLOSED, DISCUSSED

NCV 05000352/2008006; 05000353/2008006; 07200065/2008001-01, "Failure to Implement a Maintenance Activity for the Reactor Building Crane."

LIST OF DOCUMENTS REVIEWED

ALARA Plan - Limerick ALARA Plan Number 2008-124, 2008 ISFSI Campaign
AR 00783672
AR 00668842
AR 00760556
AR 00768983
AR 00735148
A0907685, LGS Reactor Enclosure Crane Update
A1661183, Frequent Inspection of Reactor Enclosure Crane, performed May 24, 2008
Certificate of Compliance: NUHOMS-61 BT, Docket 72-1004, Amendment 9
CoC Final Safety Evaluation Report
CoC Technical Specifications
ECR LG-07-00095, LGS ISFSI Project – 10CFR72.212 Report
Design Analysis Report LC-0005, Evaluation of ISFSI Haul Path Inside Reactor Building
ECR LG-95-00164, LGS Reactor Closure Crane Upgrade
ECR LG 07-0094; 07-0095, 50.59 Review and ISFSI Haul Path Evaluation
ECR LG 06-00192, ISFSI Project – Storage Pad Design and Specification
ECR LG-06-00200002, Removal of Hydrogen Storage Bottles
ISFSI Pad Oversight Report for Limerick Generating Station, Exelon Energy, LLC, September 2007, Report #28063-LIM-001, Construction Specification
LC-001, Design and Analysis of ISFSI Pad and Approach Aprons
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LIST OF ACRONYMS USED

ALARA	As Low As Reasonably Achievable
ADAMS	Agency-wide Document Access and Management System
CoC	Certificate of Compliance
CFR	Code of Federal Regulations
DCS	Dry Cask Storage
DSC	Dry Shielded Canister
UFSAR	Updated Final Safety Analysis Report
HSM	Horizontal Storage Module
IMC	Inspection Manual Chapter
IP	Inspection Procedure
ISFSI	Independent Spent Fuel Storage Installation
LGS	Limerick Generating Station
MCL	Maximum Critical Load
NCV	Non-Cited Violation
NDE	Nondestructive Examination
NRC	Nuclear Regulatory Commission
TC	Transfer Cask
TS	Technical Specification
TT	Transfer Trailer
TN	Transnuclear, Inc.
QA	Quality Assurance
SAR	Safety Analysis Report
SDP	Significance Determination Process
SER	Safety Evaluation Report